

WHAT IS CLAIMED IS:

1. A seal assembly for a regenerative air preheater having a heat exchanging body that rotates in a first direction with respect to a housing and is distally spaced from the housing so as to define a gap therebetween, the seal assembly comprising:

a sealing section that is positioned to at least partially span the gap between the heat exchanging body and the housing, wherein the sealing section includes a deformable biasing section that engages with at least a portion of both the housing and the heat exchanging body in a manner so as to resiliently deform in a second direction relative to the first direction during rotation; and

a reinforcing member interposed between the housing and the heat exchanging body so as to cover at least a portion of the sealing section, wherein the reinforcing member is positioned with respect to the sealing section so as to reinforce the sealing section when deformed in the second direction to thereby inhibit damage to the sealing section as a result of the deformation during rotation.

2. The seal assembly of Claim 1, wherein the sealing section comprises a first resilient member with interlocking features and a second resilient member having interlocking features coupled to the interlocking features of the first resilient member.

3. The seal assembly of Claim 2, wherein the coupled interlocking features define the deformable biasing section of the sealing section.

4. The seal assembly of Claim 3, wherein the reinforcing member is interposed between the housing and the heat exchanging body so as to cover at least a portion of the interlocking features of at least one of the resilient members.

5. The seal assembly of Claim 1, wherein the heat exchanging body comprises a rotor.

6. The seal assembly of Claim 5, wherein the sealing section includes a mounting section that mounts to the rotor and a contact section that contacts the housing with the deformable biasing section interposed therebetween.

7. The seal assembly of Claim 6, wherein the mounting section and the contact section of the seal member are urged towards each other when the contact section contacts the housing.

8. The seal assembly of Claim 7, wherein the reinforcing member is mounted to the rotor so that the reinforcing member inhibits movement of the contact section and the mounting section towards each other.

9. The seal assembly of Claim 8, wherein the reinforcing member comprises a biasing section that provides resilient biasing against movement of the contact section of the seal member towards the mounting section of the seal member.

10. The seal assembly of Claim 9, wherein the biasing section of the reinforcing member comprises a bent section that contours the structural shape of at least one of the first and second resilient members.

11. The seal assembly of Claim 10, wherein the biasing section of the reinforcing member contacts the first and second resilient members so that the reinforcing member inhibits movement of at least a portion of the first and second resilient members in the direction substantially perpendicular to the first direction.

12. The seal assembly of Claim 10, wherein the reinforcing member further provides a biasing force in a direction relative to the movement of the first and second resilient members.

13. The seal assembly of Claim 1, wherein the reinforcing member comprises a mounting section that mounts to the heat exchanging body, a contact section that contacts the seal member, and a biasing section.

14. The seal assembly of Claim 13, wherein the biasing section comprises a bent section that is angularly displaced from a position substantially perpendicular to the housing.

15. The seal assembly of Claim 14, wherein the contact section comprises an elongate section that contacts at least one of the first and second resilient members so as to oppose movement of the first and second resilient members in the direction substantially perpendicular to the first direction.

16. The seal assembly of Claim 15, wherein the contact section deflects in the direction substantially perpendicular to the first direction during rotation so as to engage the sealing section and distributes the deflection force along the elongate section.

17. The seal assembly of Claim 1, wherein the reinforcing member is positioned adjacent the sealing section so as to define a deflection gap therebetween so that the sealing

section deforms the width of the deflection gap prior to engaging the reinforcing member during rotation.

18. A regenerative air preheater device comprising:

an enclosure;

a rotor that rotates in a first direction with respect to the enclosure and is distally spaced from the enclosure so as to define a bypass gap therebetween; and

a seal assembly positioned to at least partially span the bypass gap, wherein the seal assembly comprises a resilient member having a deformable biasing section that resiliently deforms in a second direction relative to the first direction in response to contact with at least a portion of the enclosure during rotation, and wherein the seal assembly further comprises a reinforcing member interposed between the rotor and the resilient member that reinforces the resilient member when the resilient member is deformed in the second direction to thereby inhibit damage to the seal assembly as a result of the deformation during rotation.

19. The device of Claim 18, wherein the reinforcing member is positioned adjacent the resilient member so as to define a deflection gap therebetween so that the seal assembly deforms the width of the deflection gap prior to engaging the reinforcing member during rotation.

20. The device of Claim 18, wherein the resilient member comprises a first resilient component having a first plurality of interlocking features and a second resilient component having a second plurality of interlocking features coupled to the first plurality of interlocking features.

21. The device of Claim 18, wherein the seal assembly is mounted to the rotor so as to at least partially span the bypass gap.

22. The device of Claim 18, wherein the rotor comprises a heat exchanging body, and wherein the enclosure comprises a housing.

23. The device of Claim 18, wherein the resilient member includes a mounting section that mounts to the rotor and a contact section that contacts the enclosure with the deformable biasing section interposed therebetween.

24. The device of Claim 23, wherein the mounting section and the contact section are urged towards each other when the contact section contacts the enclosure.

25. The device of Claim 24, wherein the reinforcing member is mounted to the rotor so that the reinforcing member inhibits movement of the contact section and the mounting section towards each other.

26. The device of Claim 25, wherein the reinforcing member comprises a biasing section that provides resilient biasing against movement of the contact section towards the mounting section.

27. The device of Claim 26, wherein the biasing section of the reinforcing member comprises a bent section that contours the structural shape of the resilient member.

28. The device of Claim 27, wherein the biasing section of the reinforcing member contacts the resilient member so that the reinforcing member inhibits movement of resilient member in a direction substantially perpendicular to the first direction.

29. The device of Claim 28, wherein the reinforcing member further provides a biasing force in a direction relative to the movement of the resilient member.

30. The device of Claim 18, wherein the reinforcing member comprises a mounting section that mounts to the rotor, a contact section that contacts the resilient member, and a biasing section.

31. The device of Claim 30, wherein the biasing section of the reinforcing member comprises a bent section that is angularly displaced from a position substantially perpendicular to the enclosure.

32. The device of Claim 31, wherein the contact section of the reinforcing member comprises an elongate section that contacts the resilient member so as to oppose movement of the resilient member in the direction substantially perpendicular to the first direction.

33. The device of Claim 32, wherein the contact section of the reinforcing member deflects in the direction substantially perpendicular to the first direction during rotation so as to engage the resilient member and distributes the deflection force along the elongate section.

34. A seal assembly for a regenerative preheater having a sealing surface defined between a rotor and an enclosure that rotate with respect to each other in a first direction, the seal assembly comprising:

a sealing member positioned between the rotor and the enclosure, wherein the sealing member comprises at least two resilient sections having interlocking tabs that independently deform in a second direction relative to the first direction of rotation in response to contact with at least a portion of the sealing surface; and

a reinforcing member positioned with respect to the sealing member so as to cover at least a portion of the interlocking tabs and reinforce the sealing member when the sealing member is deformed in the second direction to thereby inhibit damage to the sealing member as a result of the deformation.

35. The seal assembly of Claim 34, wherein the rotor comprises a heat exchanging body, and wherein the enclosure comprises a housing.

36. The seal assembly of Claim 34, wherein the sealing section includes a mounting section that mounts to the rotor and a contact section that contacts the enclosure with the deformable biasing section interposed therebetween.

37. The seal assembly of Claim 36, wherein the mounting section and the contact section of the sealing member are urged towards each other when the contact section contacts the enclosure.

38. The seal assembly of Claim 37, wherein the reinforcing member is mounted to the rotor so that the reinforcing member inhibits movement of the contact section and the mounting section towards each other.

39. The seal assembly of Claim 38, wherein the reinforcing member comprises a biasing section that provides resilient biasing against movement of the contact section of the seal member towards the mounting section of the sealing member.

40. The seal assembly of Claim 39, wherein the biasing section of the reinforcing member comprises a bent section that contours the structural shape of at least one of the resilient sections.

41. The seal assembly of Claim 40, wherein the biasing section of the reinforcing member contacts at least one of the resilient sections so that the reinforcing member inhibits

movement of at least a portion of the resilient sections in the direction substantially perpendicular to the first direction.

42. The seal assembly of Claim 40, wherein the reinforcing member further provides a biasing force in a direction relative to the movement of at least one of the resilient sections.

43. The seal assembly of Claim 34, wherein the reinforcing member comprises a mounting section that mounts to the rotor, a contact section that contacts the sealing member, and a biasing section.

44. The seal assembly of Claim 43, wherein the biasing section of the reinforcing member comprises a bent section that is angularly displaced from a position substantially perpendicular to the enclosure.

45. The seal assembly of Claim 44, wherein the contact section of the reinforcing member comprises an elongate section that contacts at least one of the resilient sections so as to oppose movement of at least one of the resilient sections in the direction substantially perpendicular to the first direction.

46. The seal assembly of Claim 45, wherein the contact section of the reinforcing member deflects in the direction substantially perpendicular to the first direction during rotation so as to engage the sealing member and distributes the deflection force along the elongate section.